Remarks/Arguments

Claims 1-8 are pending in this application with claims 1, 3, 4, 5, and 7 being amended by this response and claims 6 and 8 being cancelled by this response. Support for these amendments can be found throughout the original specification and the original claims, and specifically on page 4, lines 20-22 and page 5, lines 1-6 and 14-31. In view of the support for the amendments, it is respectfully submitted that no new matter has been added by the amendments.

Rejection of Claims 1 and 4 under 35 U.S.C. §112

Claims 1 and 4 are rejected under 35 U.S.C. §112 as being indefinite.

Claims 1 and 4 have been amended to provide antecedent basis for all terms. Consequently, Applicants respectfully submit that the rejection of claims 1 and 4 under 35 U.S.C. §112 has been satisfied and should be withdrawn.

Rejection of Claims 7 and 8 under 35 U.S.C. §101

Claims 7 and 8 are rejected under 35 U.S.C. §101 as not falling within one of the four statutory categories of invention.

The Office Action has rejected claims 7 and 8 for not falling within one of the four categories of patentable subject matter. Claim 8 is cancelled by this response.

Amended claim 7 provides a device for encoding video data of a video sequence comprising alternating video shots. The device includes a processing circuit for segmentation of the sequence into shots according to their content, the construction of a sprite for each class, and the composition of a large sprite by concatenation of these sprites. The device further includes a circuit for the extraction of foreground objects from images corresponding to the large sprite. The device also includes an encoding circuit for the encoding of the large sprite and the extracted foreground objects.

The claim recites "a device" that includes "a processing circuit," "a circuit for the extraction of foreground objects from images," and "an encoding circuit." Thus, the device provided in the claim constitutes a machine, and falls within the definition of patentable subject matter according to 35 U.S.C. 101. In view of the above remarks and amendments,

Applicants respectfully submit that the rejection of claim 7 is satisfied and should be withdrawn.

Rejection of Claims 1-8 under 35 U.S.C. §102(e)

Claims 1-8 are rejected under 35 U.S.C. §102(e) as being anticipated by Allmen et al. (US 6,738,424), hereinafter Allmen.

Independent claim 1 provides a process for compression of digital data of a video sequence comprising alternating video shots. The sequence is segmented into video shots. The shots are classified by comparison of the contents of shots, a class corresponding to shots with similar contents. A sprite or video object plane for a class is constructed. The sprite is a composite image corresponding to a background of the shots allocated to this class. At least two sprites are concatenated onto one sprite or video object plane, in order to form an image called a large sprite. For the shots corresponding to the large sprite, foreground objects from images of these shots are extracted. The large sprite and the extracted foreground objects are respectively encoded.

The present claimed method enables improved compression of video data for video sequences comprising alternating shots by taking into account physical characteristics of video sequences that comprise alternating video shots, thereby enabling more efficient storage, transmission, and processing of such video data for presentation or display. The method first segments images into shots and identifies classes of shots according to their content, then constructs a sprite or video object plane for a class. The method then builds a composite image, composed by concatenating two or more sprites from adjacent macroblocks of multiple shots in separate classes until a large sprite is formed that serves as the background for a set of alternating classes of shots.

The Office Action asserts that the process for compression of digital data of a video sequence disclosed in Allmen comprises segmentation of the sequence into video shots, classification of the shots according to camera angles, construction of a sprite for a class that is a composite image corresponding to the background for a class, grouping at least two sprites onto the same sprite to form an image called a large sprite, extraction of

foreground objects from the images corresponding to the large sprite, and encoding of the large sprite and the extracted foreground objects. Applicants respectfully disagree.

Allmen describes a method for compressing digital video data using three-dimensional scene model generation (Allmen col. 7, lines 16 – 32). A video is first decomposed into a sequence of frames obtained from a single, possibly moving and/or rotating, camera, or "shots." In Allmen, shots "demarcate the points of editing" (Allmen col. 10, lines 32 – 40). The camera position and orientation are then computed for a plurality of frames in the video, and the camera motion is classified, not the shot contents. Finally, moving foreground objects are separated from background data, and the foreground and background data are separately encoded before converting the data to a standard MPEG syntax. During this step, a three-dimensional scene model is constructed for the shot (Allmen col. 7, lines 32 – 45). Unlike the present claimed method, Allmen explicitly rejects using a "mosaic," or two-dimensional scene model, in favor of computing a three-dimensional scene model based on a coordinate system determined for an image sequence (Allmen col. 7, lines 65 – 67 and lines 46 – 50), thus teaching away from the present claimed arrangement.

Allmen is completely different from the method described in the present claimed arrangement, in that, after identifying shots, or sequences of frames from a given camera, Allmen examines the motion of the camera to build a three-dimensional scene model for each shot. Thus, Allmen fails to disclose or suggest "classification of shots by comparison of the contents of shots in order to obtain classes, a class corresponding to shots with similar contents" as recited in claim 1. The three dimensional scene model method described in Allmen requires considerable and complex processing, as evidenced by the discussion in Allmen relating to the construction of the three-dimensional scene model (Allmen col. 14, line 53, col. 18, line 31). In the present claimed arrangement, after the shots have been identified, they are classified according to the similarity of their content. Allmen does not disclose or suggest "the classification of these shots" as recited in claim 1.

Further, Allmen fails to disclose or suggest "construction of a sprite or video object plane for a class that is a composite image corresponding to a background of the shots allocated to this class" as recited in claim 1. Although Allmen builds a sprite to represent the background as it separates foreground from background, Allmen builds the sprite by working from the three dimensional scene model that it has constructed for each shot, not from using "a composite image corresponding to a background of the shots allocated to this class" (Allmen Fig. 4a, Reference No. 316 and col. 14, lines 32 – 58). This is completely different from the present claimed arrangement, which recites "construction of a sprite . . . that is a composite image corresponding to a background of the shots allocated to the class" as recited in claim 1. In the present arrangement, similar shots all use the single background sprite of their class, resulting in improved efficiency of data compression. Only as a final step before encoding does Allmen suggest possibly merging background data from multiple scene models that it has determined have a "matching background" (Allmen col. 20, lines 8 – 22).

Moreover, Allmen nowhere discloses or suggests "concatenation of at least two sprites onto one sprite" as recited in claim 1 of the present arrangement. The large sprite created by concatenation enables efficient encoding of "a video sequence comprising alternating video shots" as recited in claim 1. A single background sprite representing the alternate shots need be transported only once. Allmen nowhere discloses or suggests building a large sprite that can serve as a single set of background data not merely for a shot, or even for a class of shots, but for "alternating video shots" as recited in claim 1 of the present arrangement.

Thus, Allmen does not disclose or suggest "classification of shots by comparison of the contents of shots in order to obtain classes, a class corresponding to shots with similar contents" or "construction of a sprite or video object plane for a class that is a composite image corresponding to a background of the shots allocated to this class" or "concatenation of at least two sprites onto one sprite" as recited in claim 1. Consequently, Allmen fails to anticipate the method of the present claimed arrangement, and Applicants respectfully submit that the rejection of claim 1 is satisfied and should be withdrawn.

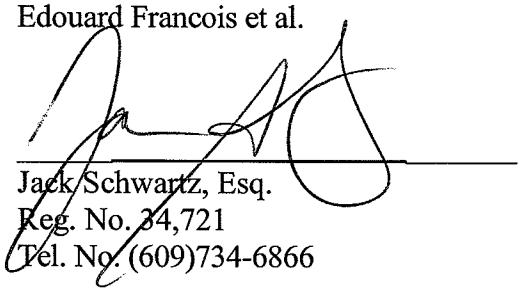
Claims 2-5 are dependent on claim 1 and are considered patentable for the reasons presented above with regard to claim 1.

Claim 7 has features similar to those of claim 1 and is considered patentable for the reasons presented above with regard to claim 1.

In view of the foregoing, Applicant respectfully requests that the rejections of claims 1-5 and 7 set forth in the Office Action of January 6, 2009 be withdrawn and that the case proceed to issuance of Letters Patent in due course.

It is believed that no additional fees or charges are currently due. However, in the event that any additional fees or charges are required at this time in connection with the application, they may be charged to applicant's representatives Deposit Account No. 07-0832.

Respectfully submitted,
Edouard Francois et al.



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